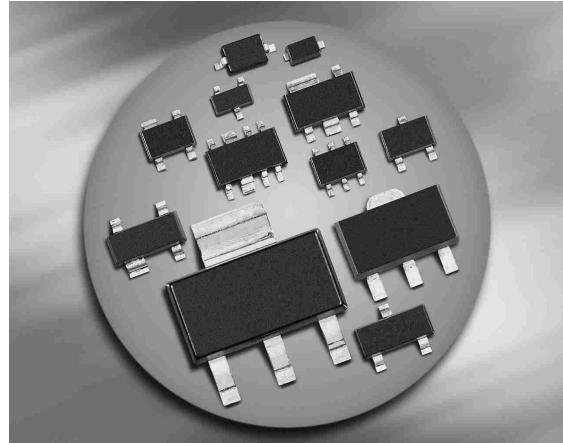


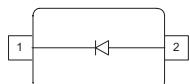
### Silicon Variable Capacitance Diodes

- For tuning of extended frequency band in VHF TV / VTR tuners
- High capacitance ratio
- Low series inductance
- Low series resistance
- Excellent uniformity and matching due to "in-line" matching assembly procedure



**BB639**

**BB659**



Type	Package	Configuration	$L_s$ (nH)	Marking
BB639	SOD323	single	1.8	yellow S
BB659	SCD80	single	0.6	DE

**Maximum Ratings at  $T_A = 25^\circ\text{C}$ , unless otherwise specified**

Parameter	Symbol	Value	Unit
Diode reverse voltage	$V_R$	30	V
Peak reverse voltage ( $R \geq 5\text{k}\Omega$ )	$V_{RM}$	35	
Forward current	$I_F$	20	mA
Operating temperature range	$T_{op}$	-55 ... 150	°C
Storage temperature	$T_{stg}$	-55 ... 150	

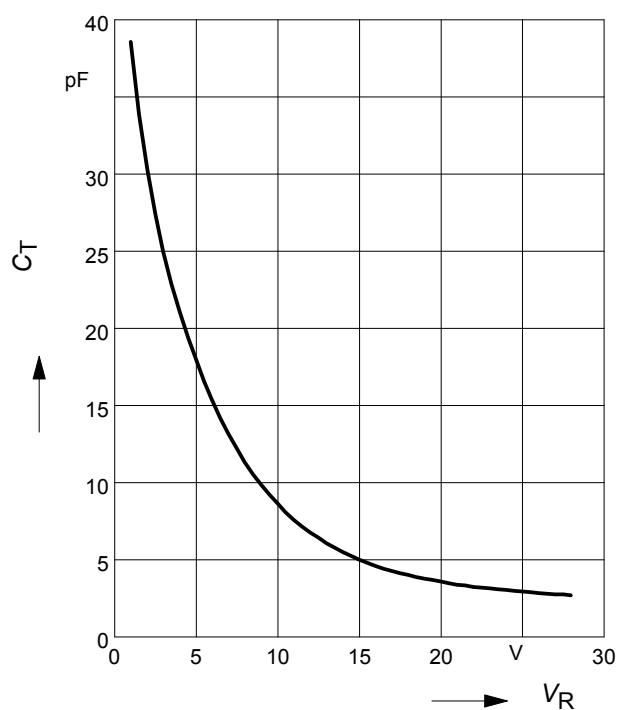
**Electrical Characteristics** at  $T_A = 25^\circ\text{C}$ , unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
<b>DC Characteristics</b>					
Reverse current $V_R = 30 \text{ V}$ $V_R = 30 \text{ V}, T_A = 85^\circ\text{C}$	$I_R$	-	-	10 200	nA
<b>AC Characteristics</b>					
Diode capacitance $V_R = 1 \text{ V}, f = 1 \text{ MHz}$ $V_R = 2 \text{ V}, f = 1 \text{ MHz}$ $V_R = 25 \text{ V}, f = 1 \text{ MHz}$ $V_R = 28 \text{ V}, f = 1 \text{ MHz}$	$C_T$	36 27.7 2.5 2.4	38.3 29.75 2.85 2.6	40 31.8 3.2 2.9	pF
Capacitance ratio $V_R = 1 \text{ V}, V_R = 28 \text{ V}, f = 1 \text{ MHz}$	$C_{T1}/C_{T28}$	13.5	14.7	-	
Capacitance ratio $V_R = 2 \text{ V}, V_R = 25 \text{ V}, f = 1 \text{ MHz}$	$C_{T2}/C_{T25}$	9.8	10.4	-	
Capacitance matching <sup>1)</sup> $V_R = 1 \text{ V}, V_R = 28 \text{ V}, f = 1 \text{ MHz}, \text{7 diode sequence}$ BB639 $V_R = 1 \text{ V}, V_R = 28 \text{ V}, f = 1 \text{ MHz}, \text{4 diode sequence}$ BB659 $V_R = 1 \text{ V}, V_R = 28 \text{ V}, f = 1 \text{ MHz}, \text{7 diode sequence}$ BB659	$\Delta C_T/C_T$	- - - -	- 0.3 0.4	2.5 1 2	%
Series resistance $V_R = 5 \text{ V}, f = 470 \text{ MHz}$	$r_S$	-	0.65	0.7	$\Omega$

<sup>1)</sup>For details please refer to Application Note 047.

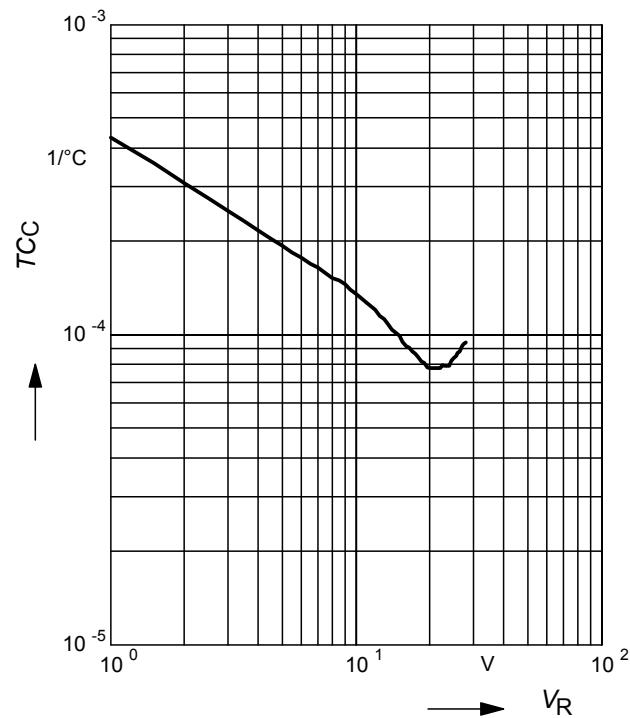
**Diode capacitance  $C_T = f (V_R)$**

$f = 1\text{MHz}$



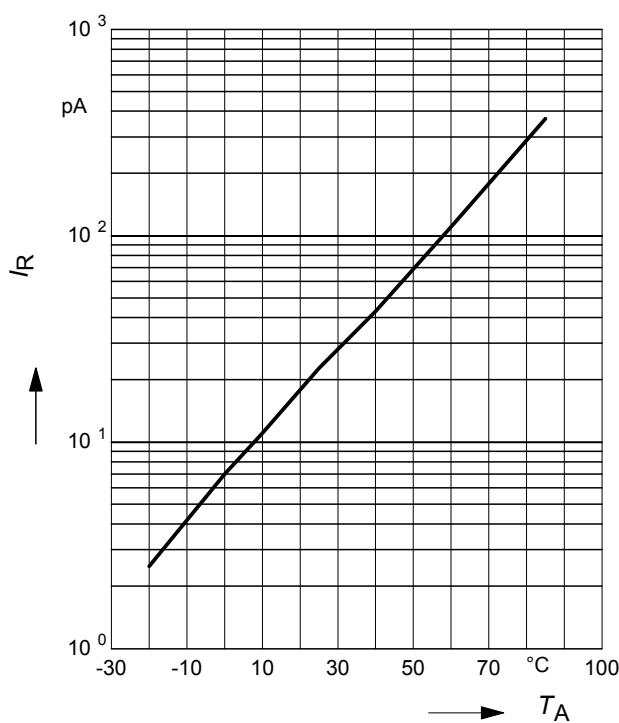
**Temperature coefficient of the diode capacitance  $T_{Cc} = f (V_R)$**

$T_A = \text{Parameter}$



**Reverse current  $I_R = f (T_A)$**

$V_R = 28\text{V}$



**Reverse current  $I_R = f(V_R)$**

$T_A = \text{Parameter}$

